



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/695,755	10/24/2000	Michael A. Nelson	CROSS1400-1	2697
44654	7590	08/07/2006	EXAMINER	
SPRINKLE IP LAW GROUP 1301 W. 25TH STREET SUITE 408 AUSTIN, TX 78705			RYMAN, DANIEL J	
			ART UNIT	PAPER NUMBER
			2616	

DATE MAILED: 08/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

ST

Office Action Summary	Application No. 09/695,755	Applicant(s) NELSON ET AL.	
	Examiner Daniel J. Ryman	Art Unit 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6, 7, 9, 10, 12-14 and 19-23 is/are rejected.
- 7) ☒ Claim(s) 1, 4, 5, 8-11 and 15-23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see Response, filed 6/13/2006, with respect to claims 4, 5, 8, 11, and 15-18 have been fully considered and are persuasive. The rejection of claims 4, 5, 8, and 15-18 has been withdrawn.
2. Applicant's arguments filed 6/13/2006 have been fully considered but they are not persuasive regarding claims 1-3, 6, 7, 9, 10, 12-14, and 19-23. On pages 7-9 of the Response, Applicant asserts that "Epps does not anticipate claims 1, 9, and 19 as Epps fails to teach i) duplication of header information and ii) making a routing decision for a frame prior to the frame reaching a head poison [sic] in a receive buffer based on header information in header storage." Examiner, respectfully, disagrees.
3. Regarding (i), claim 1 does not actually require duplication of header information, as Applicant asserts. Rather, claim 1 only requires that the frames are stored in a receive buffer and that the header information is stored in a header storage. As outlined in the rejection, Epps discloses that "packet receive stage 1220 consists of logically (although not necessarily physically) separate FIFOs, one for header portions (header FIFO 1320) and one for tail portions (tail FIFO 1330)" (col. 15, line 66-col. 16, line 2). See also, col. 5, lines 51-55 and col. 8, lines 29-34. Thus, Epps discloses storing the frames in a receive buffer, where the receive buffer consists of a single physical FIFO buffer. Epps further discloses storing the headers in header storage, where the header storage consists of a logical FIFO – header FIFO 1320.
4. Regarding (ii), Epps discloses that the routing decision is made in a pipeline stage previous to the last pipeline stage (where the TLU stage identifies "which queue to send the

Art Unit: 2616

packet to,” i.e. the TLU stage makes a “routing decision,” col. 6, lines 36-42, and where the TLU stage is prior to other stages, such as the gather stage, col. 6, lines 43-59). As such, Epps discloses that the routing decision for a particular packet is made while a header for another packet received before the particular packet is still being processed in a subsequent pipeline stage. Epps also discloses that a tail portion being read out will always correspond to a header portion being read out (col. 15, lines 61-56). As such, Epps discloses that a header and tail portion for a packet will only be read from their respective logical buffers after the header has completed processing in the pipeline processor. Taken together, these two teachings disclose that the routing decision is made prior to the tail and header portion reaching the head position in their respective logical buffers since the routing decision is made in a pipeline stage prior to the last stage in the pipeline. In view of the discussion of (i), Epps further discloses storing the header and tail portions in a single physical buffer. Therefore, Epps discloses making a routing decision for a frame prior to the frame reaching a head position in a receive buffer based on header information in header storage.

5. In view of the foregoing, Examiner maintains that Epps anticipates claims 1, 9, and 19.

Claim Objections

6. Claim 1 is objected to because of the following informalities: in lines 3-4, “is configured to be accessed” should be “is to be accessed” since “configured to” makes optional, but does not require the subsequent limitation, and, in line 6, “is configured to provide” should be “provides” since “configured to” makes optional, but does not require the subsequent limitation.

Appropriate correction is required.

Art Unit: 2616

7. Claim 5 is objected to because of the following informalities: in line 1, “a timer” should be “the timer”. Appropriate correction is required.

8. Claim 9 is objected to because of the following informalities: in line 2, “configured to store” should be “stores” since “configured to” makes optional, but does not require the subsequent limitation; in line 3, “is configured to be accessed” should be “is accessed” since “configured to” makes optional, but does not require the subsequent limitation; in line 4, “configured to store” should be “stores” since “configured to” makes optional, but does not require the subsequent limitation; and in line 7, “is configured to make” should be “makes” since “configured to” makes optional, but does not require the subsequent limitation. Appropriate correction is required.

9. Claim 10 is objected to because of the following informalities: in line 2, “is configured to identify” should be “identifies” since “configured to” makes optional, but does not require the subsequent limitation. Appropriate correction is required.

10. Claim 11 is objected to because of the following informalities: in line 2, “configured to receive” should be “to receive” since “configured to” makes optional, but does not require the subsequent limitation, and, in lines 3-4, “is configured to make” should be “makes” since “configured to” makes optional, but does not require the subsequent limitation. Appropriate correction is required.

11. Claim 15 is objected to because of the following informalities: in line 2, “the each frames” should be “the frames” since the “plurality of timers” are associated with “the frames” and not “each frame,” i.e. each frames has only one timer associated with it – not the plurality of timers. Appropriate correction is required.

Art Unit: 2616

12. Claim 18 is objected to because of the following informalities: in line 1, “a transmit timers” should be “a transmit timer”. Appropriate correction is required.

13. Claim 19 is objected to because of the following informalities: in line 3, “is configured to receive” should be “receives” since “configured to” makes optional, but does not require the subsequent limitation; in line 6, “configured to store” should be “to store” since “configured to” makes optional, but does not require the subsequent limitation; in line 7, “configured to store” should be “to store” since “configured to” makes optional, but does not require the subsequent limitation; and in line 10, “is configured to receive” should be “receives” since “configured to” makes optional, but does not require the subsequent limitation. Appropriate correction is required.

14. Claim 20 is objected to because of the following informalities: in line 2, “is configured to store” should be “stores” since “configured to” makes optional, but does not require the subsequent limitation, and, in line 3, “is configured to read” should be “reads” since “configured to” makes optional, but does not require the subsequent limitation. Appropriate correction is required.

15. Claim 21 is objected to because of the following informalities: in line 2, “is configured to make” should be “makes” since “configured to” makes optional, but does not require the subsequent limitation. Appropriate correction is required.

16. Claim 22 is objected to because of the following informalities: in line 2, “is configured to make” should be “makes” since “configured to” makes optional, but does not require the subsequent limitation. Appropriate correction is required.

Art Unit: 2616

17. Claim 23 is objected to because of the following informalities: in line 6, “is configured to receive” should be “receives” since “configured to” makes optional, but does not require the subsequent limitation; in line 8, “is configured to store” should be “stores” since “configured to” makes optional, but does not require the subsequent limitation; and, in line 10, “is configured to read” should be “reads” since “configured to” makes optional, but does not require the subsequent limitation. Appropriate correction is required.

Claim Rejections - 35 USC § 102

18. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

19. Claims 1-3, 7, 9, 12-14, and 19-23 are rejected under 35 U.S.C. 102(e) as being anticipated by Epps et al. (USPN 6,731,644), of record.

20. Regarding claims 1, 9, 19, 20, and 23, Epps discloses a method and system comprising: receiving a plurality of frames (col. 3, lines 11-36 and col. 4, lines 58-67); storing the frames in a receive buffer (ref. 215), wherein the receive buffer is configured to be accessed in a first-in-first-out fashion (Fig. 3; col. 5, lines 47-60; and col. 8, lines 29-34) where physically there is only a single receive buffer that stores the header and tail portion of the frame; storing header information corresponding to each of the frames in a header storage (ref. 480), wherein the header storage is configured to provide access to the header information in the same order as the frames (Figs. 3 and 4; col. 5, lines 47-60; and col. 9, lines 34-41); retrieving header

Art Unit: 2616

information from the header storage, wherein the header information corresponds to a first frame (col. 5, line 61-col. 6, line 6; col. 9, lines 1-15; and col. 9, lines 34-41); prior to the first frame reaching a head position in the receive buffer, making a routing decision for delivering the first frame to its destination based upon the header information (col. 5, line 61-col. 6, line 6 and col. 9, lines 1-22) where the routing decision is made in an intermediate stage of the pipeline process (the TLU stage: col. 6, lines 36-42) and where the packet is transferred once it has reached the final pipeline stage; retrieving the first frame from the receive buffer (col. 5, line 61-col. 6, line 6 and col. 9, lines 11-22) where the “frame” is retrieved from the receive buffer and sent transmit buffer; and routing the first frame based upon the routing decision (col. 3, lines 22-34 and col. 9, lines 1-22).

21. Regarding claims 2, 21, and 22, Epps discloses that the routing decision for the first frame is made while a preceding frame is being routed (col. 3, lines 22-36 and col. 5, line 61-col. 6, line 6).

22. Regarding claim 3, Epps teaches the limitation wherein routing the first frame comprises transmitting the first frame to the transmit buffer of a destination determined by the routing decision (col. 1, lines 51-56; col. 3, lines 22-34; and col. 9, lines 1-22).

23. Regarding claims 7, 12, 13 and 14, Epps teaches the limitation wherein the receive buffer is a First-in-first-out (FIFO) buffer having a head position and a tail position, wherein entries are written to the tail position and are promoted through the FIFO buffer to the head position, and wherein retrieving the first frame from the receive buffer comprises reading the frame at the head position (Fig. 3; col. 5, line 51-col. 6, line 6; and col. 15, lines 61-65).

Claim Rejections - 35 USC § 103

24. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

25. Claims 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Epps et al. (USPN 6,731,644), of record, as applied to claims 1 and 9 above, and in further view of Darnell et al. (US 6,317,415), of record.

26. Regarding claims 6 and 10, Epps does not expressly disclose snooping on received frames to identify the header information corresponding to each of the frames. Darnell teaches, in the analogous field of communications, using a snoop circuit (ref. 120) for snooping on received frames to identify the start of a frame (Fig. 5 and col. 11, lines 53-col. 5, lines 20-43). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to snoop on received frames to identify the header information corresponding to each of the frames since snooping is well known in the art as a means for identifying portions of a data stream.

Allowable Subject Matter

27. Claims 4, 5, and 15-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art does not disclose or fairly suggest tying a specific timer to a header in the header buffer or a frame in its buffer to indicate the amount of time that a frame has been in the buffer.

Art Unit: 2616

28. Claims 8 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. While Epps suggest that the processor will not sit idle and wait for a header to reach the head of a queue, Epps does not expressly disclose how the processor will ensure that it will not sit idle. Thus, while Epps does not suggest Applicant's bypass circuit, Epps does suggest some mechanism, such as packing headers into the buffer in a manner that eliminates gaps, to ensure that there is no gap in the processing of headers.

Conclusion

29. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nichols et al. (US 4,977,582) and Sang et al. (US 6,577,636) disclose routing/forwarding systems that include storing frame header information.

30. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 2616

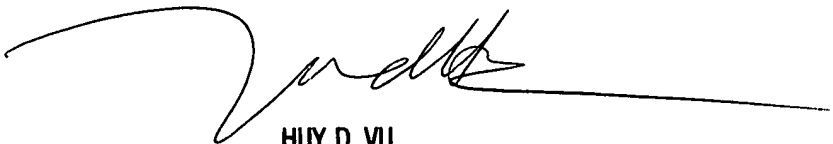
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Ryman whose telephone number is (571)272-3152. The examiner can normally be reached on Mon.-Fri. 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571)272-3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Daniel J Ryman
Examiner
Art Unit 2616

DJR

A handwritten signature in black ink, appearing to read 'Huy D. Vu', with a long horizontal flourish extending to the right.

HUY D. VU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600